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ABSTRACT

A study investigated the effect of research-based instructional strategies on the reading achievement of students in grades two through five. Instructional process variables were assembled into a manual used to train 24 experimental teachers. The five categories of variables were (1) classroom environment, (2) lesson introduction, (3) lesson presentation, (4) questioning, and (5) feedback. The teachers were randomly assigned, stratified by grade level, to observed or unobserved experimental groups or to a control group. The experimental treatment was designed to enhance teachers' use of reading instructional strategies associated with reading achievement. Pupils were pretested and posttested with the McGraw-Hill Prescriptive Reading Inventory. Observational data gathered on teachers' use of instructional process variables were correlated with adjusted pupil reading achievement scores to specify the strengths of associations between the two. No significant differences were found among treatment and control groups, so data were examined for differences among teachers. Significant positive correlations for "more effective" teachers were found between pupils' total reading achievement and the instructional process variables of engaging students in learning and asking direct questions. Significant negative correlations were found between achievement and the instructional variables of asking rhetorical questions and giving nonacademic commands. (HTH)

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EFFECTIVENESS TRAINING FOR ELEMENTARY TEACHERS OF READING

A primary concern of those who work with future teachers is introducing them to effective teaching strategies. When they leave the university and our methods courses, they need not only to know how to define "individualized instruction", but also to know how to meet the needs of individual students in their classes. In order to give students an understanding of effective teaching, it is necessary to know something about research findings in this area.

Educators have access to approximately 80 years of research in teacher effectiveness. Early research was largely subjective in nature. It focused on instructional strategies, looking for the best way and the best materials to use. Teacher characteristics such as sex, race, age, years of experience and personality factors were closely examined in an attempt to find universal traits of an effective teacher.

A concern over teacher preparation was expressed as early as 1893 by J.M. Rice (1893), a pediatrician, who toured America as a critical journalist. He felt that incompetence in the teaching profession called for better preparation in the normal or teacher-training schools of our country.

A. C. Boyce (1915) pointed out the need for objective measures of teacher effectiveness. He found that most teacher ratings were done by supervisors who responded with "general impressions" of teachers' abilities.

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A. S. Barr (1929) attempted to isolate teacher behaviors discriminating effective from ineffective teachers. Although he collected a great amount of information, his study was of limited value since the ultimate criterion for judging effective teaching behavior was based on supervisory judgment--a subjective criterion. It was a hallmark investigation, however, since it focused on using direct observation of teacher and pupil behavior in assessing teaching effectiveness.

The development of an instrument for measuring teacher and pupil behaviors through direct observation by Medley and Mitzel (1958), and the interaction instrument of Flanders (1960) opened the door to new possibilities in research. Most researchers at this time were operating independently and investigations often lacked reliability.

During the late 1960's and 1970's attention began to focus on instructional activities and how these affected pupil achievement. Actual teaching activities were referred to as process variables. These were the variables which could be observed or reported on in actual classroom settings. Such variables as teacher-initiated talk, pupil-initiated talk, and time spent on instructional tasks were measured. The product dimension of the investigations referred to pupil achievement gains. The focus was shifting from broad, difficult-to-define variables, to concern over teacher-pupil interaction.

In an attempt to gain information on working more effectively with disadvantaged youngsters following public school integration, the National Institute of Education allotted large sums of money to teacher effectiveness research. (Brophy and Evertson, 1974; Good and Grouws, 1977; McDonald and Elias, 1976; Soar and Soar, 1972; Stallings and Kaskowitz, 1974; and Tikunoff, Berliner, and Rist, 1975).

This funding enabled researchers to conduct studies on a large scale, and encouraged cooperation and coordination among researchers. As a result, improvements in research design began to appear, and meaningful data focusing on instruction in basic skills in elementary classrooms were gathered.

Three experimental studies based on the findings of these NIE studies regarding teacher instructional behaviors in skill teaching in the areas of reading and math in the elementary grades followed. (Anderson, Evertson, and Brophy, 1978; Good, 1978; Program on Teaching Effectiveness, 1978). A major feature of this research was a training element, in which experimental teachers were trained to use particular instructional strategies and classroom management procedures found to be associated positively with student learning in reading and mathematics. Each study found statistically significant results favoring treatment teachers over control teachers in producing significant pupil achievement gains on standardized achievement tests.

Some of the instructional process variables that were a part of these experimental studies were grouped to form a set of instructional strategies that were used to train experimental teachers in the present study. The instructional process variables were grouped into five categories: Classroom Environment, Introduction of the Lesson, Lesson Presentation, Questioning, and Feedback. Classroom Environment variables are those variables within the classroom environment over which the teacher has some control, such as seating pupils where their behavior can be monitored by the teacher at all times, grouping pupils for instruction, and managing group and classroom behaviors. Included in Introduction of the Lesson would be variables such as using attention-getting techniques, setting the lesson purpose, recalling to pupils prerequisite learning, and presenting vocabulary.

Variables related to Lesson Presentation are demonstrations or explanations of new material, step-by-step descriptions of processes involved, utilization of illustrations and written examples reflecting children's experiences, organization of information, assignment of application tasks, and guided discussion of written work. Variables related to Questioning are those of student selection techniques, as well as those variables related to the types of questions asked, whether lower order, higher order, or probing questions. Included in feedback would be variables related to pupils' answers to questions asked, whether right, partially right, or wrong.

These variables were incorporated into a training manual which was used as the primary medium of instruction in the present study. Previous research has suggested that training teachers of reading through the use of a training manual has been effective in changing teachers' instructional behaviors, and has resulted in increased pupil learning.

This investigation examined the effect of some of these research-based instructional strategies on pupils' reading achievement in the second, third, fourth, and fifth grades. A sample of twenty-four elementary teachers in a central Texas school district were randomly assigned, stratified on grade level, to one of three groups: experimental observed (n=8), experimental nonobserved (n=8), or control observed (n=8). The experimental treatment was designed to enhance teachers' use of reading instructional strategies which have been associated with pupils' reading achievement. The control treatment involved use of procedures for interpreting pupils' reading test performance. Experimental observed and control observed teachers were observed six times during their classroom reading instruction, over a nine week period, using the Group Reading Interaction Pattern Observation Instrument (Mangano, 1982). Pupils were pretested and

posttested with the Prescriptive Reading Inventory (McGraw-Hill, 1972). Linear regression procedures were used to compare pupil achievement in the three groups and to test for significant differences of socioeconomic groups within experimental teachers' classes. Observational data gathered on teachers' use of the instructional process variables were correlated with adjusted pupil reading achievement scores to specify the strengths of association between the two. Similar procedures were employed to compare socioeconomic groups within experimental classes, socioeconomic groups within control classes compared to those within experimental classes, primary classes with intermediate classes, and the "more effective" with "less effective" classes.

There were no significant differences found among treatment and control groups. Consequently, data were examined for differences among teachers. According to Cronbach and Snow (1981), teachers tend to conserve and enhance already apparent talents in classes in which pupil posttest scores correlate strongly with pretest scores. Variance within these classes tends to increase, and the slope of the plotted regression equation is steep. In classes in which pupil posttest scores correlate weakly with pretest scores, teachers have worked to overcome pupil deficiencies. Variance within these classrooms tends to decrease, and the slope of the plotted regression equation is less steep.

Following these guidelines, linear regression procedures were used to establish the regression slope for each teacher. Pretest scores were used as the predictor variable and posttest scores were used as the criterion variable in computing these equations. The equations were then graphed. Utilizing the guidelines suggested by Cronbach and Snow, eight classes displaying a steep slope and five classes displaying a flatter slope were identified.

Data regarding the frequency of use of reading instruction behaviors were available only on teachers who were observed. The identified classes with steep slopes, designated "less effective" teachers, included six observed classes and two nonobserved classes. The identified classes with flatter slopes, designated "more effective" teachers, included three observed classes and two nonobserved classes.

Pearson product-moment correlation coefficients for the criterion variable total reading and the instructional process variables, which were summed over observations for the selected observed teachers who exhibited a steep slope when compared with other teachers and for those identified observed teachers who exhibited a flatter slope when compared with other teachers, were computed.

Significant positive correlations for "more effective" teachers were found between pupil total reading achievement and the instructional process variables 1) engaging students in learning and 2) asking direct questions. Significant negative correlations were found between achievement and the instructional process variables 1) asking rhetorical questions and 2) giving non-academic commands. A significant positive correlation was found for "less effective" teachers between the teacher behavior of calling on volunteers for answering during questioning and pupil total reading achievement.

Coding sheets that had been completed by observers during classroom observations were studied in order to find instructional process patterns common to all three classrooms. Particular strategies having to do with question and answer techniques emerged. Common to all three classrooms was the pattern of asking a question (direct or open-ended), calling on a student (pre-selected or non-volunteer), and receiving an answer (right, wrong, or incomplete). Right answers were followed by positive feedback;

wrong or incomplete answers were followed by either a restated or a probing question. Positive feedback almost always followed correct answers to questions that had previously been answered incorrectly. Two of the three teachers followed a consistent order in calling on students; the same two teachers continued to probe students who gave incorrect or incomplete answers until students produced a correct response. This pattern of "question, answer, feedback or probing question" was the only instructional process pattern which emerged. All three teachers employed a strategy for engaging students in the task at hand; however, since this was not followed by a common behavior or activity, no instructional process pattern resulted.

Several conclusions can be drawn from the study:

1. Indications are that the reading instructional strategies of engaging students in learning and asking direct questions can be effective in increasing pupil achievement gains.
2. There were no overall findings regarding reading groups, due to the absence of data. However, two of the three more effective teachers who were observed utilized different reading groups within the classroom.
3. Participants in an experimental research study should have some incentive for participation. Expecting already overworked teachers to be enthusiastic about learning and implementing new strategies in their classrooms was unrealistic.

Based on the findings of this study and conclusions drawn, the following recommendations are made:

1. This study should be replicated in other experimental situations that include an incentive for teachers who participate in the study.
2. It is suggested that experimenters emphasize instructional process patterns as opposed to teaching a set of strategies in order to

encourage implementation of the strategies in the classroom. One instructional process pattern might be the pattern using questioning techniques which was suggested by the data in this study: asking a question, receiving a response, followed by either positive feedback for a correct answer, or a probing question for a wrong or incomplete answer. Another instructional pattern might include lesson presentation strategies: engaging students in the lesson, setting a purpose, recalling past learning, and giving information.

3. Grouping students for instruction should be an in-place technique prior to beginning a replicative study. Variations on grouping strategies can be implemented more readily than introducing grouping as a new strategy.
4. The focus of replicative studies should be on one instructional pattern at a time. This would limit the strategies to be introduced, to be learned, to be implemented, to be observed, and to be analyzed. All phases of the study should benefit from a smaller scope.
5. Instructional time with teachers should be during inservice time, not during the teachers' only conference period. All experimental teachers should receive instruction at one time. All control teachers should receive instruction at one time.
6. Instruction, observation, and feedback should be an alternating pattern throughout the study; this would help insure implementation of the instructional strategies by providing feedback on a regular basis.

7. The different strategies required for effective teaching in different skill areas in the teaching of reading should be investigated.
8. Further investigations comparing teachers who reduce the variance on reading achievement test scores among pupils in their classrooms with teachers who increase the variance on reading achievement test scores among pupils in their classrooms should be made.

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